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09/755,970	01/05/2001	Ofir Shalvi	TI-30924	5153

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EXAMINER	
LAMBRECHT, CHRISTOPHER M	
ART UNIT	**PAPER NUMBER**
2611	

DATE MAILED: 09/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/755,970	SHALVI ET AL.	
	Examiner	Art Unit	
	Christopher M. Lambrecht	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 May 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,5,7 and 28-39* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,5,7 and 28-39* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 May 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claim 28 is objected to because of the following informalities: Claim 28 should be changed to depend from claim 7. Appropriate correction is required.

2. Claim 36 is objected to because of the following informalities: On lines 1 and 2 of claim 36, the text "first" should be replaced with "modulated". Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1, 7, 28-36 are rejected under 35 U.S.C. 102(e) as being anticipated by Ahmed (Ahmed et al., US006519773B1).

With regard to claim 1, Ahmed discloses a method of data transmission over a cable television network (fig. 1B, col. 4, ll. 66-67) between a cable modem termination system headend (106, fig. 1B, where the network services a cable modem 142, it inherently comprises a CMTS) and consumer premises equipment (134-148, fig. 1B), comprising: providing a first digital data stream signal (Z_1[nT], fig. 9A) associated with a first cable television channel (col. 13, ll. 7-10); providing a second digital data stream signal (Z_2[nT], fig. 9A) associated with a second cable television channel (col. 13, ll. 7-10); combining the first and second digital data stream signals (Z_1[nT], Z_2[nT]) to create a first combined digital data stream signal (J_1[nT], combined by digital frequency modulator block 906A, coll. 13, ll. 16-22); converting the first combined digital data stream signal to a modulated first analog signal (col. 13, ll. 20-25), the first analog signal having a central frequency (where an analog signal occupying a given

bandwidth inherently comprises a center frequency, i.e., $f_{center} = \frac{f_{upper} + f_{lower}}{2}$, where f_{upper} and f_{lower} designate the maximum and minimum frequencies of the band occupied by the analog signal, respectively); and up-shifting (at up-converter 912A, col. 13, ll. 25-27) the central frequency of the first analog signal to create a cable network transmittable analog signal having a frequency suited for transmission along a cable network transmission medium (col. 13, ll. 58-63).

As for claim 7, Ahmed discloses the method according to claim1, further comprising transmitting the up-shifted first analog signal in a downstream direction from the headend to the consumer premises equipment (col. 13, ll. 58-63) using a bandwidth wider than the bandwidth of the first or second channels alone (where transmitting a plurality of channels (e.g., 6 MHz wide analog channels, col. 8, ll. 51-52) in a combined FDM signal (col. 13, ll. 36-38) inherently uses a bandwidth wider than the bandwidth of a single channel alone).

As for claim 28, Ahmed discloses the method according to claim 7, wherein the first and second digital data stream signals (Z_1[nT], Z_2[nT], subsequently labeled F_1[nT], F_2[nT] after anti-imaging filters 904A,B) are respectively associated with adjacent cable television network channels (983 of fig. 9B illustrates spectral diagram of output of IFFT 906, showing that input channels F_1[nT] and F_2[nT] are adjacent in the combined FDM CATV signal to be delivered to consumers, col. 13, ll. 33-39 and 58-63).

As for claim 29, Ahmed discloses the method according to claim 28, wherein the wider bandwidth corresponds to the combined bandwidths allocated for separate transmission of the adjacent television network channels (see 983 of fig. 9B: bandwidth of combined signal J_1 is equal to combined bandwidths of adjacent CATV channels 1, 2, ...K).

As for claim 30, Ahmed discloses the method according to claim 1, wherein digitally combining the first and second digital data stream signals comprises multiplexing the first and second digital data streams (at block 906A, fig. 9A, where the IFFT combines the signals using frequency division multiplexing, col. 13, ll. 33-39).

As for claim 31, Ahmed discloses the method according to claim 1, further comprising filtering the first analog signal (at low-pass filter 910A, fig. 9A) prior to upshifting (at frequency converter 912A, fig. 9A, col. 13, ll. 25-30).

As for claim 32, Ahmed discloses the method according to claim 1, wherein the first and second digital data streams (embodied as first combined digital data stream) are converted from digital to analog by means of a common digital-to-analog converter (DAC 908A, fig. 9A, col. 13, ll. 20-25).

With regard to claim 33, Ahmed discloses a method of transmission of adjacent television channel broadcasts over a cable television network (fig. 1B, col. 4, ll. 66-67) between a cable modem termination system headend (106, fig. 1B, where the network services a cable modem 142, it inherently comprises a CMTS) and consumer premises equipment (134-148, fig. 1B), comprising: providing a first digital data stream signal (Z_1[nT], fig. 9A) associated with a first cable television channel (col. 13, ll. 7-10); providing a second digital data stream signal (Z_2[nT], fig. 9A) associated with a second cable television channel (col. 13, ll. 7-10); combining and converting the first and second digital data stream signals (Z_1[nT], Z_2[nT]) into a modulated analog signal (combined by digital frequency modulator block 906A, coll. 13, ll. 16-22; converted to analog: col. 13, ll. 20-25), the analog signal having a central frequency (where an analog signal occupying a given bandwidth inherently comprises a center frequency, i.e., $f_{center} = \frac{f_{upper} + f_{lower}}{2}$, where f_{upper} and f_{lower} designate the maximum and minimum frequencies of the band occupied by the analog signal, respectively); up-shifting (at up-converter 912A, col. 13, ll. 25-27) the central frequency of the analog signal to a higher central frequency (col. 13, ll. 58-60, where an up-converter inherently converters to a higher frequency); and transmitting the analog signal in a downstream direction to the customer premises equipment along a cable network transmission medium (col. 13, ll. 60-63), using a bandwidth corresponding to a bandwidth of the combined adjacent channels (see 983 of fig. 9B, bandwidth of combined signal J_1 is equal to combined bandwidths of adjacent CATV channels 1, 2, ...K).

As for claim 34, Ahmed discloses the method according to claim 33, wherein, in the combining and converting step, the first and second digital data stream signals are digitally combined to create a combined digital data stream signal (J_1[nT], combined by digital frequency modulator block 906A, coll. 13, ll. 16-22); and the combined digital data stream signal is converted into the modulated analog signal (col. 13, ll. 20-25).

As for claim 35, Ahmed discloses the method according to claim 34, wherein digitally combining the first and second digital data stream signals comprises multiplexing the first and second digital data streams (at block 906A, fig. 9A, where the IFFT combines the signals using frequency division multiplexing, col. 13, ll. 33-39).

As for claim 36, Ahmed discloses the method according to claim 35, further comprising filtering the first and second analog signals (at low-pass filters 910A and 910B, fig. 9A) prior to upshifting (at up-converters 912A and 912B fig. 9A, col. 13, ll. 25-30).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 2, 3, 5, and 37-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ahmed in view of Calderone (US006477182B2).

As for claim 2, Ahmed discloses the method according to claim 1, further comprising: providing a third digital data stream signal (Z_{k+1}[nT], fig. 9A) associated with a third cable television channel (col. 13, ll. 7-10); providing a fourth digital data stream signal (Z_{k+2}[nT], fig. 9A) associated with a fourth cable television channel (col. 13, ll. 7-10); combining the third and fourth digital data stream signals (Z_{k+1}[nT], Z_{k+2}[nT]) to create a second combined digital data stream signal (J_{k+1}[nT], combined by digital

frequency modulator block 906B, coll. 13, ll. 16-22); converting the second combined digital data stream signal to a modulated second analog signal (col. 13, ll. 20-25), the second analog signal having a central frequency (where an analog signal occupying a given bandwidth inherently comprises a center frequency, i.e., $f_{center} = \frac{f_{upper} + f_{lower}}{2}$, where f_{upper} and f_{lower} designate the maximum and minimum frequencies of the band occupied by the analog signal, respectively); and combining (at combiner 916) the first analog signal and the second analog signal to create a combined analog signal (col. 13, ll. 30-32) having a plurality of center frequencies (each group of channels shifted to a different designated carrier frequencies, col. 13, ll. 58-63).

Ahmed fails to disclose upshifting the first analog signal central frequency comprises upshifting the central frequencies of the combined analog signal.

In an analogous art, Calderone discloses upshifting the first analog signal (S2-1, fig. 1) central frequency comprises upshifting the central frequencies of the combined analog signal (S4, fig. 1) (where up-shifting is achieved by 1st and 2nd mixers 140 and 160 in conjunction with synthesizers 145 and 165, col. 3, ll. 10-15, 26-37, and col. 3, l. 64 – col. 4, l. 11; i.e., the center frequency of first modulated analog signal S2-1 is upshifted starting at mixer 140 in the signal path, at which point it is in combination with at least second modulated analog signal S2-2 (as combined analog signal S4); hence, upshifting the center frequency of modulated analog signal S2-1 comprises upshifting the central frequencies of the combined analog signal), for the purpose of processing a plurality of modulated IF carriers with a single up-converter (col. 5, ll. 14-17).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include in the method of Ahmed upshifting the first analog signal central frequency comprises upshifting the central frequencies of the combined analog signal, as taught by Calderone, for the purpose of processing a plurality of modulated IF carriers with a single up-converter.

As for claim 3, Ahmed and Calderone together disclose the method of claim 2, wherein digitally combining the first and second digital data stream signals comprises multiplexing the first and second digital data stream signals (Ahmed, at block 906A, fig. 9A, where the IFFT combines the signals using frequency division multiplexing, col. 13, ll. 33-39), and whereby digitally combining the third and fourth digital data stream signals comprises multiplexing the third and fourth digital data stream signals (Ahmed, at block 906B, fig. 9A, where the IFFT combines the signals using frequency division multiplexing, col. 13, ll. 33-39).

As for claim 5, Ahmed and Calderone together disclose the method of claim 3, further comprising filtering the first and second analog signals (Ahmed, at low-pass filters 910A and 910B, fig. 9A) prior to upshifting (Ahmed, at up-converters 912A and 912B fig. 9A, col. 13, ll. 25-30).

With regard to claim 37, Ahmed discloses a method of transmission of adjacent television channel broadcasts over a cable television network (fig. 1B, col. 4, ll. 66-67) between a cable modem termination system headend (106, fig. 1B, where the network services a cable modem 142, it inherently comprises a CMTS) and consumer premises equipment (134-148, fig. 1B), comprising: providing a first digital data stream signal ($Z_1[nT]$, fig. 9A) associated with a first cable television channel (col. 13, ll. 7-10); providing a second digital data stream signal ($Z_{k+1}[nT]$, fig. 9A) associated with a second cable television channel (col. 13, ll. 7-10); converting the first digital data stream signals ($Z_1[nT]$) into a modulated first analog signal (K_1, col. 13, ll. 20-25) having a first central frequency (where an analog signal occupying a given bandwidth inherently comprises a center frequency, i.e., $f_{center} = \frac{f_{upper} + f_{lower}}{2}$, where f_{upper} and f_{lower} designate the maximum and minimum frequencies of the band occupied by the analog signal, respectively); converting the second digital data stream signals ($Z_{k+1}[nT]$) into a modulated second analog signal (K_{k+1}, col. 13, ll. 20-25) a second central frequency (where an analog signal occupying a given bandwidth inherently comprises a center frequency, see above); combining the first and second analog signals to create a combined analog signal (col. 13, ll. 30-

32); and transmitting the combined analog signal in a downstream direction to the customer premises equipment along a cable network transmission medium (col. 13, ll. 60-63), using a bandwidth corresponding to a bandwidth of the combined adjacent channels (see 983 of fig. 9B, bandwidth of combined signal J_1 is equal to combined bandwidths of adjacent CATV channels 1, 2, ...K).

Ahmed fails to disclose upshifting the combined analog signal to a higher frequency.

In an analogous art, Calderone discloses upshifting a combined analog signal (S4, fig. 1, where outputs of QAM modulators MC-1,2 are analog (modulated) signals) to a higher frequency (achieved by 1st and 2nd mixers 140 and 160 in conjunction with synthesizers 145 and 165)(col. 3, ll. 10-15, 26-37, and col. 3, l. 64 – col. 4, l. 11), for the purpose of processing a plurality of modulated IF carriers with a single up-converter (col. 5, ll. 14-17).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Ahmed to include upshifting the combined analog signal to a higher frequency, as taught by Calderone, for the purpose of processing a plurality of modulated IF carriers with a single up-converter in a method of transmission of adjacent cable television channels.

As for claim 38, Ahmed and Calderone together disclose the method according to claim 37, wherein combining the first and second analog signals comprises summing the first and second analog signals (Calderone, SUM 130, fig. 1).

As for claim 39, Ahmed and Calderone together disclose the method to claim 38, further comprising filtering the first and second analog signals prior to up-shifting the combined analog signal (Ahmed, LPFs 910A, 910B, col. 13, ll. 22-27).

Conclusion

7. The following are suggested formats for either a Certificate of Mailing or Certificate of Transmission under 37 CFR 1.8(a). The certification may be included with all correspondence concerning this application or proceeding to establish a date of mailing or transmission under 37 CFR 1.8(a). Proper use of this procedure will result in such communication being considered as timely if the established date is within the required period for reply. The Certificate should be signed by the individual actually depositing or transmitting the correspondence or by an individual who, upon information and belief, expects the correspondence to be mailed or transmitted in the normal course of business by another no later than the date indicated.

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Please refer to 37 CFR 1.6(d) and 1.8(a)(2) for filing limitations concerning facsimile transmissions and mailing, respectively.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher M. Lambrecht whose telephone number is (703) 305-8710. The examiner can normally be reached on 9:30 AM - 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christopher Grant can be reached on (703) 305-4755. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Christopher M. Lambrecht
Examiner
Art Unit 2611

CML

CHRIS GRANT
PRIMARY EXAMINER